Phytotoxicology 2000 Investigation: Heather and Little Ltd. - Toronto

September 2000

Ontario

Ministry of the Environment

Phytotoxicology 2000 Investigation: Heather and Little Ltd. - Toronto

Phytotoxicology Investigation: PAH Contamination at Ivy and Wagstaff Rd. Toronto (2000)

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Background:

During investigations conducted by the Ecological Standards and Toxicology Section (ESTS) (formerly the Phytotoxicology Section) in 1995, 1997, 1998 and 1999, extensive soil contamination by polycyclic aromatic hydrocarbons (PAHs) was documented in a residential area of eastern Toronto. This contamination was found to be particularly intensive in the rear yards of Ivy Avenue residential properties that bordered a land parcel leased by Heather and Little Ltd. from Thomson Groceries. Similarly elevated PAH concentrations were also found in the rear yards of Ivy Avenue properties bordering a laneway, Wagstaff Drive, that led to this land parcel. To ensure clarity and retain nomenclature that has been applied to this leased land parcel, it will be referred to as the current H&L staging yard.

Reports documenting the results of the investigations conducted in 1995, 1997 and 1998 have been prepared and assigned report numbers SDB-067-3511-1996, SDB-008-3511-1998 and SDB-008-3511-1999, respectively. The reader is referred to these documents for pertinent background material.

The primary conclusion reached during the course of these investigations was that Heather and Little Ltd. was the source of the PAH contamination. The support for this conclusion can be itemized as follows:

- The nature of H&L's business was installation of flat roof coverings and materials used for such coverings included coal tar pitch. Major constituents of coal tar are PAHs.
- Highly elevated concentrations of PAHs were encountered in soil samples collected from the current H&L staging yard as well as from beneath the concrete pavement presently covering Wagstaff Drive. Wagstaff Drive was and is the only access to H&L's workshop and the current H&L staging yard, and would have been traversed by tar melting pots.
- The soil samples collected from residential properties that had close physical association with either the current H&L staging yard or Wagstaff Drive contained, as a rule but not without exception, the highest PAH concentrations.
- The residential properties along the north side of Ivy Avenue were and are at a lower elevation than the two suggested source areas. This would favour a migration of the contaminant from the source areas to these residential properties, probably carried in runoff of precipitation.
- Since the current H&L staging yard is not paved and Wagstaff Drive was also unpaved until 1980, wind borne dust containing the contaminants would have been distributed over neighbouring properties.
- An examination of archival records of historic land use in the area by the MOE Toronto District Office, no evidence of an alternative source of PAHs in this neighbourhood.

In spite of the historic evidence suggesting H&L was indeed the most probable source of the PAH contamination, the investigation that is the subject of this report was initiated to

evaluate the potential for additional sources of the contamination.

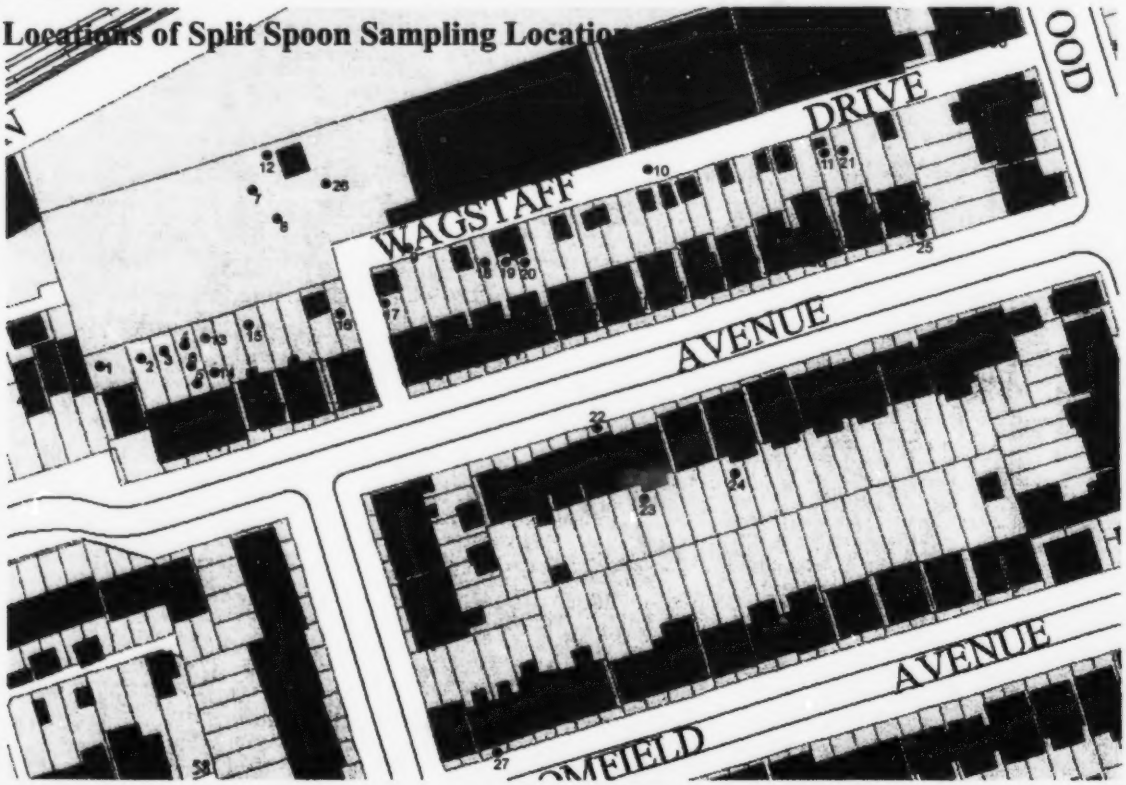
Investigation Methods:

To facilitate this investigation, the MOE Toronto District Office contracted with an environmental consulting firm to provide the expertise and equipment to investigate sub-surface conditions in locations identified by the MOE-ESTS investigator. With this type of support it was possible to recover material buried at depths greater than the approximately 50 centimetres that could be accessed with the routine sampling equipment used by the ESTS.

Over several days in early March, 2000, and under the direction of the MOE-ESTS investigator, the consultant's staff drove a split spoon sampler to depths that ranged from two feet to fourteen feet at twenty-seven locations. The actual sampler measured two feet in length and recovered cores in these increments. As each split spoon increment was recovered, it was subjected to a visual examination, wrapped intact in a plastic food wrap material and retained in a cardboard tube of appropriate size. Labelling of each increment identified the sampling location, the increment, and its orientation. Since the driving of the sampler involved a gasoline powered jack hammer, there was frequent compression of the sample increment so that the length of the increment as recovered was less than two feet. This length was measured and recorded. In addition, field notes and sketches were produced to precisely identify the sampling location.

The figure below indicates the locations at which the split spoon sampling was conducted. The numbers next to the black dot location markers where assigned in the sequence that sampling occurred. These numbers coincide with the "Split Spoon Drill Site" numbers in the data tables.

Locations of Split Spoon Sampling Locations



The samples were transported to the MOE-ESTS offices and laboratory where the increments were removed from the tubes and unwrapped so that they could air dry. Once dry, the whole length of each increment was examined under a microscope and the field observations were enhanced or corrected.

Once all cores were examined, a total of 50 sampling points were identified by the MOE-ESTS investigator that would be submitted to the MOE Laboratory Services Branch for PAH analysis. The criterion for selecting these points was primarily one that would direct analyses to the various materials encountered in the split spoon increments or otherwise included areas where the nature of materials suggested discontinuity in the type of material composing the soil stratum.

Results:

The results of this investigation have been compiled in a series of tables appended to the end of this report. Each table contains the descriptions of all increments recovered at each of the twenty-seven sampling locations. The first column identifies the successive two foot split spoon increments recovered at the given location. The second column reports the actual length of the increment as recovered. Note that most of the increment lengths are less than 61 centimetres (equivalent to two feet) indicating that the material was compressed by the sampling process. The third column contains a description of the material along with an indication of the proportion, as a percentage, of the compressed length of the increment to which the description applies. The fourth column describes the material that was taken for analysis, and its position in the increment. This column also contains the B(a)P concentration for the analytical sample.

To supplement these data, the B(a)P concentrations of soil samples previously collected by MOE-ESTS or H&L's consultant (Golder) have been reproduced on the same respective pages as the split spoon data. Note, however, that these historic data are typically for surface or near-surface soil samples collected from throughout the yard that the split spoon sampler was driven. They are provided for information only and as an aid to data interpretation.

Discussion:

In this discussion, the complete series of split spoon increments collected at a given location will be examined in turn. The sequence to be followed will proceed, from west to east, through the rear yard locations of properties on the north side of Ivy Avenue that are adjacent to the current staging yard and parking areas to the east. The second group of locations are the rear yards of properties bordering Wagstaff Drive. Subsequently, locations that are not in direct proximity to the source areas yet have been found to contain PAH contamination will be examined. The fourth group of locations are in an area which had previously been leased by H&L. These include three location in what is termed the Salvage Yard and one in the Thomson Groceries Yard. This area will be referred to as the former H&L staging yard. Finally, two locations under the Wagstaff Drive pavement where previous sampling identified PAH contamination in the material immediately below the concrete pavement, will be examined.

Following a review of conditions in these five groups of locations, an overall interpretive summary will be prepared in an attempt to reconcile the observed conditions with the PAH contamination present.

50 Ivy Ave. - Rear Yard

The property at this address was developed between 1971 and 1978 as indicated by air photos. Prior to this it was vacant. Given this fact, it is very probable that considerable soil disturbance occurred during the house construction and as a result, observations and data would be difficult to interpret.

The topsoil in the rear yard was a silty clay, unlike the other properties in the neighbourhood where sandy loam prevailed. The rear yard was also about one metre higher than the adjacent yard at 60 Ivy. Historic data indicated a B(a)P concentration of 320 ng/g in the 0-5 cm layer which would suggest no unusual PAH contamination, i.e. within urban background.

There were many distinct layers of different materials throughout the sampling depth. Some of this material was coal ash. Sampling on this and easterly adjacent properties confirmed that the ravine system that preceded the development of the housing in the early 1900s was used to dispose of ashes from coal fired furnaces. Analysis of the ash material found B(a)P at a less than detectable concentration.

In the third split spoon increment, two buried vegetation/organic layers were uncovered, underlain by the sand common at other locations. These layers indicate the level of the topsoil prior to construction or burial of indigenous topsoil. B(a)P concentrations were 760 and 800 ng/g, indicating a nominal contamination. This is important to note since it indicates that the now buried topsoil layers were likely contaminated by the same means as were yards to the east.

At lower depths the materials consisted of silt with varying amounts and thicknesses of ash and associated materials such as coal, glass, iron rust, ceramics, brick, all of which could be envisioned as being disposed of with the coal ashes.

In the seventh increment, a dark silty sand was encountered in the midst of material containing ash and associated materials. This was apparently another buried vegetation layer. The B(a)P concentration was 200 ng/g. Given the disturbance that would have taken place here, it is difficult to assign significance to this buried organic layer.

60 Ivy Ave. - Rear Yard

Surface (0-5 cm) soil data from this yard indicated considerably less contamination than the adjacent, 62 Ivy, rear yard. Conversations with residents had revealed that clean soil had been added to the top of the yard, providing an adequate explanation for the difference.

In the second split spoon increment, a black streak of what appeared to be an asphalt material staining the silt was found. Analysis of this stained silt indicated 640 ng/g B(a)P. This concentration is too low to suggest that the black material was coal tar.

An ash sample from the third increment also indicated that coal ashes were PAH-free. Evidence of ashes was also present in the fourth and fifth increments. The sixth increment was clean sand.

62 Ivy Ave. - Rear Yard

Previous surface soil data suggests considerable PAH contamination in this yard, although the topsoil sample analyzed in this investigation suggests only a nominal B(a)P

concentration of 840 ng/g. There is clearly a considerable heterogeneity in this yard.

Sand and silt are layered between coal ashes, which when analyzed are also found to be PAH-free.

64 Ivy Ave. - Rear Yard # 1

Previous surface soil data indicated a high degree of contamination which was confirmed by a topsoil sample from the first split spoon increment, which contained 24,000 ng/g B(a)P. The first two increments consisted of alternating layers of ashes and sand. The third and fourth increments consisted almost entirely of ashes. Pure sand lay below the thick ash layer. An ash sample had a nominal B(a)P concentration of 480 ng/g.

64 Ivy Ave. - Rear Yard # 2

The second sampling location in this yard revealed similar layers except that the ash layer was not as thick and the clean sand was found closer to the surface. An ash sample was PAH-free. It should be noted that this second location is 10 metres south of the first. Historic air photos show the land sloping down to the north, entering the ravine. Consequently, the observed depth of ashes and sand are totally consistent with more ash deposition at the north end of this yard.

64 Ivy Ave. - Rear Yard # 3

The third sampling location in this yard was located between the first two. Not surprisingly, the ash layer is of intermediate thickness.

66 Ivy Ave. - Rear Yard #1

The profile at this location consisted of sand over ashes. The sand layer contained a notable amount of coal fragments. Analysis of the topsoil and a dark sand at the top of the second increment revealed B(a)P concentrations of 1,700 and 1,800 ng/g. A dark sand at the bottom of the second increment contained 920 ng/g. These concentrations although elevated, are not nearly as high as at 64 Ivy. At this location, a fragment of coal tar was found in the first increment.

An ash sample indicated again that coal ashes were PAH-free.

66 Ivy Ave. - Rear Yard #2

The second location in this yard was 7.5 metres south of the first. The pattern was very similar to that observed at 64 Ivy, namely that the thickness of the ashes was less than at the northerly location and the clean sand was closer to the surface. This is again consistent with a thicker layer of ashes being deposited in the deeper part of the ravine.

70 Ivy Ave. - Rear Yard

The most notable observation at this location was the absence of ashes. It appears that this yard was located outside the historic ravine and thus not subjected to ash disposal. A dark sand sampled at the bottom the first increment revealed a B(a)P concentration of 1,600 ng/g. The underlying dark sand with coal and brick fragments suggests that a buried surface soil exists in this yard.

A mottled sand layer was observed near the bottom of the third increment but analysis indicated that it was PAH-free.

78 Ivy Ave. - Rear Yard

This yard is located where Wagstaff Drive makes a 90 degree turn to the south. The slope of the east-west section of Wagstaff Drive would predispose precipitation runoff down this unpaved laneway to find its way into this yard. Previous data reveals considerable contamination. Data collected by Golder shows a very clear pattern of declining concentrations of B(a)P with depth. A sample of topsoil confirmed the elevated B(a)P concentrations.

Summary for Group 1: 50 through 78 Ivy Ave. - Rear Yards

A considerable effort was made to document the presence of coal ashes in this group of sampling locations. This was primarily in response to suggestions that these ashes could be a source of PAHs. Analysis of several recovered ashes samples consistently revealed that ashes are not a source of PAHs.

When the B(a)P data collected in this investigation are combined with those reported previously, it becomes clear that the most consistent and intensive contamination occurs in the soil of yards located adjacent to the current H&L staging yard and the former H&L staging yard, i.e. 50 through 78 Ivy Avenue. Air photography of 1963 shows H&L at the former staging yard. To the west is the area that became the current staging yard. A topographic gradient exists between the former yard, the current yard and the residential yards. Precipitation runoff would follow this gradient and deliver suspended materials to the residential yards.

There are considerable differences in the degree of contamination between adjacent yards. This can be rationalized by inferring that runoff would favour certain pathways over others. Furthermore, homeowners would likely attempt to divert runoff to prevent flooding of their yards, including raising yard elevations as suggested by buried topsoil horizons.

The historic topography would provide a pathway for materials from locations such as the former H&L staging yard to be carried in precipitation runoff and deposited in a heterogeneous pattern in residential yards downslope.

80 Ivy Ave. - Rear Yard

The split spoon sampling at this location did not have to go very deep to reveal what may be described as a normal, undisturbed soil profile. About half of the first increment was sand darkened by organic matter. The remainder and all of the subsequent increment consisted of pure sand. Yet, a sample taken from the dark sand topsoil revealed 8,500 ng/g B(a)P, an elevated concentration.

This property borders Wagstaff Drive on the north and the west where this laneway turns south. It is conceivable that the PAH contamination migrated from the contaminated and unpaved surface of Wagstaff Drive from two directions. While there is a garage blocking part of the exposure to from the north, the split spoon sampling site had exposure to runoff from Wagstaff Drive.

94 Ivy Ave. - Rear Yard

This yard is located at a significantly lower elevation than the surface of Wagstaff Drive. There is no garage in this yard, nor was there one indicated in the 1963 air photo. The soil profile

is almost identical to that at 80 Ivy, i.e. sand darkened by organic matter over pure sand. Given the lower elevation and no interfering structure, runoff from Wagstaff Drive could readily enter this yard. The topsoil sample analyzed contained 32,000 ng/g B(a)P, a number consistent with previous surface soil sampling.

96 Ivy Ave. - Rear Yard

There is currently an elevated parking spot held back by a retaining wall in this yard. The lawn area where all previous sampling as well as the split spoon sampling was conducted appears to have been amended recently with fresh topsoil. This may explain the pattern in the Golder data, namely B(a)P concentrations peaking in the near surface soil.

Given the low elevation of the lawn relative to Wagstaff Drive, runoff would also have access to this yard. The topsoil sample analyzed in this investigation contained an elevated B(a)P concentration of 18,000 ng/g.

98 Ivy Ave. - Rear Yard

The yard at this location, while also at a low elevation is protected by a garage. The surface contained limestone screenings as a foundation for paving brick. Beyond this, the profile was identical to others to the immediate west. The split spoon sampling was conducted in an area protected by the garage and the topsoil sample contained a moderately elevated B(a)P concentration of 1,200 ng/g. This was consistent with the Golder data. It appears the presence of the garage limited the runoff from Wagstaff Drive, resulting in lesser contamination than at unprotected yards.

132 Ivy Ave. - Rear Yard

The elevation of this yard is very close to that of Wagstaff Drive. Consequently, runoff should not be a major contributor. However, there is no structure to prevent material migrating from the laneway. The soil profile is identical to other yards in this section of Ivy Avenue and elevated concentration of B(a)P were also found in the lower portion of the organic sand layer. A sample taken immediately below this point but within a clean sand layer did not contain detectable B(a)P. This suggested an association of PAHs with stained sand. However, a dark stained sand layer in the second increment contained undetectable B(a)P. These observations are difficult to explain.

134 Ivy Ave. - Rear Yard

The soil profile at 134 Ivy was similar to that at 132 Ivy with a notable exception. The topsoil contained brick fragments and ashes suggesting that it may have been brought in from other locations. The B(a)P concentration was moderate1,300 ng/g. Since the elevation of the sampling location was moderately higher than the laneway, and runoff would not be a factor, it is possible that contaminated topsoil was imported through bulk soil movement. A similar case could be made for 132 Ivy.

Summary for Group 2: 80 through 134 Ivy Ave. - Rear Yards

Most of these yards had very similar soil profiles. Those that were at lower elevations than the laneway and were not protected by a structure also contained B(a)P significant

contamination. One yard that was protected by a garage contained only moderate concentrations of B(a)P.

Two adjacent yards that were not lower than the laneway also contained the contamination. Evidence from one of these suggest import of contaminated material.

103 Ivy Ave. - Front Yard

This location was one that was found to contain PAH contamination in previous sampling, yet was not adjacent to the suggested source areas. The appearance of the soil profile did not suggest any particular reason for this. Analysis of material collected from a slightly darkened sand near the bottom of the first increment revealed 3,600 ng/g B(a)P. The Golder data also suggest that the peak concentration is in the near surface, and not at the surface.

These observations suggest that contaminated soil was imported. It should be noted that this yard is bounded by a retaining wall and the fact that coal fragments were found in the sand of the first increment makes this plausible.

105 Ivy Ave. - Rear Yard

This yard is well removed from the suggested source areas yet previous sampling as well as analysis of a dark sand layer in this investigation indicate PAH contamination. It is interesting to note that immediately below a layer of limestone screenings, the organic stained topsoil contained coal and brick fragments. Again, importation of contaminated material is a possibility.

133 Ivy Ave. - Rear Yard

This yard is also well removed from the suggested source areas, yet contains significant contamination, especially in a sample collected from a dark sand layer at the bottom of the first increment. The visual examination indicated the presence of fragments of either coal tar or asphalt. The presence of such material suggests that material was imported.

138 Ivy Ave. - Front Yard

This location is not adjacent to the suggested source areas, however the rear yard at this address does border Wagstaff Drive. The soil profile is not in any way unusual, nor were there any material fragments observed. The sample collected from the topsoil contained a very moderate 760 ng/g B(a)P. The yard is elevated and the contamination appears to be restricted to the topsoil. Golder data indicate a peak in near surface layer. Importation of a small quantity of contaminated material is a possibility.

6 Bloomfield Ave. - Front Yard

This location is the farthest removed from the suggested source areas yet contains significant PAH contamination. Again the appearance of the soil profile was unremarkable. A sample from the bottom of the topsoil (organic matter stained) indicated B(a)P at 2,200 ng/g. A sample immediately below this contained only 240 ng/g. The Golder suggests a significant peak in the 50 - 100 cm layer, a pattern inconsistent with the type of contaminant deposition observed for locations adjacent to the suggested source areas.

However, the most significant discovery at this location occurred when using a hand

auger to locate a root-free location to drive the split spoon sampler. A fragment of coal tar, about one centimetre in diameter was recovered from within the top 75 centimetres (originating depth cannot be determined with augered material). Clearly, a fragment this size could not have washed in by runoff or carried by the wind. The material in which it was contained must have been imported.

Summary for Group 3: Yards Remote From Suggested Source Areas

The five yards examined in this group all contained evidence of importation of contaminated fill material. The dependability of these observation range from speculative to virtually certainty.

Former H&L Staging Yard Locations

As mentioned at the beginning of this Discussion section, four locations that were within the bounds of the former H&L lease area were explored with the split spoon sampler. These are identified at Salvage Yard #1 through 3, and as the Thomson Groceries Yard. They will be reviewed collectively.

Overall, material extracted with the sampler contained a mix of sand and gravel. However, within this general matrix there was present varying amounts of other materials. These included asphalt, coal, brick, glass, gypsum, concrete and clay. Clearly, the fill material deposited in this area was highly heterogeneous.

The most significant observation made during sampling in these locations was the presence of coal tar fragments and in one case a layer of about two or three centimetres that the sampler happened to encounter. Not surprisingly, some extremely high B(a)P concentrations, up to 260,000 ng/g, were observed when material from these location was analyzed. It should be noted that the actual coal tar fragments were not analyzed, since, as mentioned previously, PAHs are known to be major constituents of coal tar.

Given that H&L occupied this location during the period that coal tar was commonly used in roofing applications, and that coal tar was found in the fill material, very little doubt remains about the source of the PAH contamination. This is further supported by the observation of spilled asphalt in the current H&L staging yard, indicating that spillage of roof sealants can occur.

Sub Wagstaff Drive Pavement Locations

The final group of locations explored included two of the ten that had been sampled in 1997 after a truck mounted auger had broken through the concrete pavement on Wagstaff Drive. The samples collected at that time were from the layer immediately below the pavement. Analysis confirmed significant PAH contamination. During this investigation, the same locations were further explored with the split spoon sampler.

The first location examined, identified as Wagstaff Drive #2 in the report on the 1997 investigation (SDB-008-3511-1998), revealed a layer of coal and ash immediately below the crushed concrete. Below that was a black sand with coal. Analysis of this material revealed a very nominal 400 ng/g B(a)P. Samples of other dark sand layers from subsequent increments revealed likewise nominal or undetectable B(a)P concentrations.

The second location explored, identified in the 1997 investigation as Wagstaff Drive #6, contained a dark sand layer immediately below the crushed concrete and clean sand below that. Analyses likewise revealed nominal or undetectable B(a)P.

The data from the second location appears somewhat inconsistent with what was found under the pavement previously, namely B(a)P at 5,300 ng/g. While this could be ascribed to disturbance, what is apparent is that the PAH contamination along Wagstaff Drive is restricted to the very surface of the underlying roadbed. It should be noted that the 1997 investigation found B(a)P concentrations ranging from 3,700 to 56,000 ng/g in the sub-pavement samples.

Summary and Conclusions:

This investigation was intended to further evaluate the distribution of PAH contamination in this neighbourhood with a special emphasis on determining if there could be additional sources.

Based on the information collected by this investigation, the only reasonable conclusion that remains is that the activities of Heather & Little Ltd., over the course of many years resulted in spills of coal tar onto the surface of their former staging yard and along the unpaved surface of Wagstaff Drive. Subsequent migration, primarily by the action of precipitation runoff, distributed the contaminant over the low-lying yards near this staging yard and over yards adjacent to Wagstaff Drive.

There is a possibility that further distribution of the contamination occurred when elevations of residential yards were raised by using locally obtained, contaminated soil.

DATA TABLES

Split Spoon Drill Site # 1

50 Ivy Ave. - Rear Yard - Friday March 3, 2000

Split Spoon Increment	Compressed Length	Split Spoon Increment Description	Analytical Sample Description and B(a)P Concentration
0' - 2'	45 cm	40% - silty clay 60% - silty clay with coal, ash, limestone, glass, rust	
2' - 4'	33 cm	25% - silty clay 25% - clay 50% - ash, coal, glass	Sample # 3001 ash layer, bottom of core B(a)P = 80<T ng/g
4' - 6'	40 cm	20% - silt with coal, ash 10% - vegetation layer with wood, coal 10% - sand with coal, ash 30% - silty sand with coal, ash, concrete 30% - dark sand (organic) with coal	Sample # 3002 dark layer, near top of core B(a)P = 760 ng/g Sample # 3003 dark layer, bottom of core B(a)P = 800 ng/g
6' - 8'	37 cm	40% - silty sand with iron, coal, ash 60% - ash, coal, glass, shale	Sample # 3004 ash layer, bottom ½ of core B(a)P = 40<W ng/g
8' - 10'	14 cm	100% - ash, coal, brick, shale	
10' - 12'	52 cm	50% - silty sand with ash, wood, ceramic, rust 20% - silt 30% - silt with ash, coal, wood	
12' - 14'	44 cm	50% - coal, ash, brick, ceramic, wood 50% - dark silty sand (organic) with coal, ash	Sample # 3005 dark vegetation layer, mid point of core B(a)P = 200 ng/g
14' - 16'	60 cm	40% - coal, bone, glass, ceramic, rust, leather 60% - clay	

Previous
MOE Data

Date	Depth (cm)	[B(a)P] ng/g
Apr. 22, 1997	0 - 5	320

Previous
Golder Data

Date	Depth (cm)	[B(a)P] ng/g
Aug 97 - Oct 98	30 - 40	750

Split Spoon Drill Site # 2

60 Ivy Ave. - Rear Yard - Friday March 3, 2000

Split Spoon Increment	Compressed Length	Split Spoon Increment Description	Analytical Sample Description and B(a)P Concentration
0' - 2'	40 cm	50% - silty sand 50% - sand with coal, glass	
2' - 4'	61 cm	30% - silty sand with streak of black material (asphalt?) 70% - silt with coal	Sample # 3050 black streaked silt, 1/3 of way from top of core B(a)P = 640 ng/g
4 - 6'	61 cm	60% - silt 40% - ash, coal, wood, limestone, rust, bone	Sample # 3006 ash layer, bottom part of core B(a)P = 40<W ng/g
6' - 8'	44 cm	50% - silt with ash, coal, leaves 50% - sand with coal, ash, glass (darker sand at lower end)	
8' - 10'	61 cm	50% - sand with ash, coal, glass 25% - sand with coal 25% - silty sand with coal	
10' - 12'	61 cm	100% - sand	

Previous
MOE Data

Date	Depth (cm)	[B(a)P] ng/g
Nov. 11, 1995	0 - 5	560
Apr. 22, 1997	40 - 60	680

Previous
Golder Data

Date	Depth (cm)	[B(a)P] ng/g
Aug 97 - Oct 98	0 - 5	960
Aug 97 - Oct 98	30 - 40	70

Split Spoon Drill Site # 3

62 Ivy Ave. - Rear Yard - Friday March 3, 2000

Split Spoon Increment	Compressed Length	Split Spoon Increment Description	Analytical Sample Description and B(a)P Concentration
0' - 2'	32 cm	30% - silt with charcoal 70% - silt with brick	Sample # 3007 topsoil B(a)P = 840 ng/g
2' - 4'	45 cm	30% - silt 20% - ash, coal 50% - sand	
4' - 6'	48 cm	60% - sand 40% - ash, coal, rust	Sample # 3008 ash layer, bottom of core B(a)P = 80<T ng/g
6' - 8'	43 cm	100% - ash, coal, leaves	
8' - 10'	40 cm	70% - ash, coal, leaves 30% - silty sand	Sample # 300 ash layer, top of core B(a)P = 40<W ng/g
10' - 12'	0 cm	no sample	
12' - 14'	32 cm	50% - coal, ash, fabric 50% - silt	

Previous
MOE Data

Date	Depth (cm)	[B(a)P] ng/g
Nov. 11, 1995	0 - 5	4,200
Nov. 11, 1995	0 - 5	4,300
Nov. 11, 1995	0 - 5	760

Previous
Golder Data

Date	Depth (cm)	[B(a)P] ng/g
Aug 97 - Oct 98	0 - 10	8.990
Aug 97 - Oct 98	10 - 20	860
Aug 97 - Oct 98	30 - 40	100

Split Spoon Drill Site # 4

64 Ivy Ave. - Rear Yard # 1 - Friday March 3, 2000

Split Spoon Increment	Compressed Length	Split Spoon Increment Description	Analytical Sample Description and B(a)P Concentration
0' - 2'	40 cm	40% - silty sand 50% - sand 10% - ash, coal	Sample # 3010 topsoil B(a)P = 24,000 ng/g
2' - 4'	48 cm	10% - ash, coal 40% - sand 10% - ash 20% - sand 20% - ash, coal	
4' - 6'	48 cm	100% - ash, coal, brick, bone	Sample # 3011 ash, whole core B(a)P = 480 ng/g
6' - 8'	38 cm	90% - ash, coal, glass 10% - sand	
8' - 10'	61 cm	10% - coal, ash 90% - sand	
10' - 12'	40 cm	100% - sand	

Previous
MOE Data

Date	Depth (cm)	[B(a)P] ng/g
Nov. 11, 1995	0 - 5	36,000
Nov. 11, 1995	0 - 5	24,000
Nov. 11, 1995	0 - 5	21,000
Apr. 22, 1997	40 - 60	2,000

Previous
Golder Data

Date	Depth (cm)	[B(a)P] ng/g
Aug 97 - Oct 98	0 - 5	18,780
Aug 97 - Oct 98	0 - 10	23,600
Aug 97 - Oct 98	10 - 20	16,950
Aug 97 - Oct 98	20 - 30	9,530
Aug 97 - Oct 98	30 - 40	8,370
Aug 97 - Oct 98	40 - 50	8,500
Aug 97 - Oct 98	50 - 100	4,500 / 8,830

Split Spoon Drill Site # 5

64 Ivy Ave. - Rear Yard # 2 - Friday March 3, 2000

Split Spoon Increment	Compressed Length	Split Spoon Increment Description	Analytical Sample Description and B(a)P Concentration
0' - 2'	38 cm	40% - dark sand (organic) with coal, ash 30% - sand 30% - ash, coal	Sample # 3012 ash layer, bottom of core B(a)P = 40<W ng/g
2' - 4'	24 cm	100% - coal, ash, shale, leaves, rust	
4' - 6'	61 cm	100% - sand	
6' - 8'	25 cm	100% - sand	

Previous
MOE Data

Date	Depth (cm)	[B(a)P] ng/g
Nov. 11, 1995	0 - 5	36,000
Nov. 11, 1995	0 - 5	24,000
Nov. 11, 1995	0 - 5	21,000
Apr. 22, 1997	40 - 60	2,000

Previous
Golder Data

Date	Depth (cm)	[B(a)P] ng/g
Aug 97 - Oct 98	0 - 5	18,780
Aug 97 - Oct 98	0 - 10	23,600
Aug 97 - Oct 98	10 - 20	16,950
Aug 97 - Oct 98	20 - 30	9,530
Aug 97 - Oct 98	30 - 40	8,370
Aug 97 - Oct 98	40 - 50	8,500
Aug 97 - Oct 98	50 - 100	4,500 / 8,830

Split Spoon Drill Site # 6

64 Ivy Ave. - Rear Yard # 3 - Friday March 3, 2000

Split Spoon Increment	Compressed Length	Split Spoon Increment Description	Analytical Sample Description and B(a)P Concentration
0' - 2'	46 cm	30% - dark sand (organic) 20% - sand with ash, coal 30% - dark sand (organic) 20% - ash, coal	
2' - 4'	30 cm	100% - ash, coal, rust, glass, concrete	
4' - 6'	27 cm	10% - ash, coal 90% - silty sand	
6' - 8'	61 cm	30% - ash, coal, brick 70% - silty sand	

Previous
MOE Data

Date	Depth (cm)	[B(a)P] ng/g
Nov. 11, 1995	0 - 5	36,000
Nov. 11, 1995	0 - 5	24,000
Nov. 11, 1995	0 - 5	21,000
Apr. 22, 1997	40 - 60	2,000

Previous
Golder Data

Date	Depth (cm)	[B(a)P] ng/g
Aug 97 - Oct 98	0 - 5	18,780
Aug 97 - Oct 98	0 - 10	23,600
Aug 97 - Oct 98	10 - 20	16,950
Aug 97 - Oct 98	20 - 30	9,530
Aug 97 - Oct 98	30 - 40	8,370
Aug 97 - Oct 98	40 - 50	8,500
Aug 97 - Oct 98	50 - 100	4,500 / 8,830

Split Spoon Drill Site # 13

66 Ivy Ave. - Rear Yard # 1 - Tuesday March 7, 2000

Split Spoon Increment	Compressed Length	Split Spoon Increment Description	Analytical Sample Description and B(a)P Concentration
0' - 2'	48 cm	100% - sand with coal	Sample # 3013 topsoil B(a)P = 1,700 ng/g
2' - 4'	54 cm	80% - sand with coal 20% - sand with ash and vegetation layer, coal	Sample # 3014 dark sand, top of core B(a)P = 1,800 ng/g Sample # 3015 dark sand, bottom of core B(a)P = 920 ng/g
4' - 6'	34 cm	70% - sand with coal 30% - ash, coal	
6' - 8'	42 cm	100% - ash, coal	Sample # 3016 ash, whole core B(a)P = 40<W ng/g
8' - 10'	27 cm	50% - ash, coal 50% - silty sand	

Previous
Golder Data

Date	Depth (cm)	[B(a)P] ng/g
Aug 97 - Oct 98	0 - 5	1,470 / 1,350
Aug 97 - Oct 98	0 - 10	7,250
Aug 97 - Oct 98	10 - 20	7,100
Aug 97 - Oct 98	20 - 30	6,490
Aug 97 - Oct 98	30 - 40	3,480
Aug 97 - Oct 98	40 - 50	1,830
Aug 97 - Oct 98	50 - 100	1.720

Split Spoon Drill Site # 14

66 Ivy Ave. - Rear Yard # 2 - Tuesday March 7, 2000

Split Spoon Increment	Compressed Length	Split Spoon Increment Description	Analytical Sample Description and B(a)P Concentration
0' - 2'	45 cm	100% - sand with rust, glass, roots, coal	
2' - 4'	47 cm	40% - sand with coal 60% - ash, coal	
4' - 6'	23 cm	30% - ash, coal 70% - sand	

Previous
Golder Data

Date	Depth (cm)	[B(a)P] ng/g
Aug 97 - Oct 98	0 - 5	1,470 / 1,350
Aug 97 - Oct 98	0 - 10	7,250
Aug 97 - Oct 98	10 - 20	7,100
Aug 97 - Oct 98	20 - 30	6,490
Aug 97 - Oct 98	30 - 40	3,480
Aug 97 - Oct 98	40 - 50	1,830
Aug 97 - Oct 98	50 - 100	1.720

Split Spoon Drill Site # 15

70 Ivy Ave. - Rear Yard - Tuesday March 7, 2000

Split Spoon Increment	Compressed Length	Split Spoon Increment Description	Analytical Sample Description and B(a)P Concentration
0' - 2'	40 cm	90% - sand 10% - dark sand	Sample # 3017 dark sand, bottom of core B(a)P = 1,600 ng/g
2' - 4'	58 cm	50% - dark sand with coal, brick 50% - sand	
4' - 6'	38 cm	80% - sand with concrete 10% - dark sand 10% - sand	Sample # 3018 dark/light mottled sand, bottom of core B(a)P = 40<W ng/g
6' - 8'	61 cm	80% - sand 20% - light sand	
8' - 10'	50 cm	10% - sand with coal 90% - sand with granite and gravel at bottom	
10' - 12'	61 cm	30% - sand and gravel 70% - silty sand	

Previous
MOE Data

Date	Depth (cm)	[B(a)P] ng/g
Nov. 11, 1995	0 - 5	1,600
Nov. 11, 1995	0 - 5	2,800

Previous
Golder Data

Date	Depth (cm)	[B(a)P] ng/g
Aug 97 - Oct 98	30 - 40	4,910
Aug 97 - Oct 98	40 - 50	1,650
Aug 97 - Oct 98	50 - 100	600 / 2,040

Split Spoon Drill Site # 16

78 Ivy Ave. - Rear Yard - Tuesday March 7, 2000

Split Spoon Increment	Compressed Length	Split Spoon Increment Description	Analytical Sample Description and B(a)P Concentration
0' - 2'	39 cm	80% - dark sand 20% - sand	Sample # 3019 topsoil B(a)P = 18,000 ng/g
2' - 4'	40 cm	30% - sand 50% - dark sand 20% - sand	

Previous
MOE Data

Date	Depth (cm)	[B(a)P] ng/g
Apr. 22, 1997	0 - 5	12,000

Previous
Golder Data

Date	Depth (cm)	[B(a)P] ng/g
Aug 97 - Oct 98	0 - 5	12,980
Aug 97 - Oct 98	0 - 10	12,390
Aug 97 - Oct 98	10 - 20	8,710
Aug 97 - Oct 98	20 - 30	2,980
Aug 97 - Oct 98	30 - 40	810
Aug 97 - Oct 98	40 - 50	480

Split Spoon Drill Site # 17

80 Ivy Ave. - Rear Yard - Tuesday March 7, 2000

Split Spoon Increment	Compressed Length	Split Spoon Increment Description	Analytical Sample Description and B(a)P Concentration
0' - 2'	48 cm	60% - dark sand (organic) 40% - sand	Sample # 3020 topsoil B(a)P = 8,500 ng/g
2' - 4'	61 cm	100% - sand	

Previous
Golder Data

Date	Depth (cm)	[B(a)P] ng/g
Aug 97 - Oct 98	0 - 5	6,560
Aug 97 - Oct 98	0 - 10	7,520
Aug 97 - Oct 98	10 - 20	11,860
Aug 97 - Oct 98	20 - 30	1,710
Aug 97 - Oct 98	30 - 40	750
Aug 97 - Oct 98	40 - 50	850
Aug 97 - Oct 98	50 - 100	40

Split Spoon Drill Site # 18

94 Ivy Ave. - Rear Yard - Tuesday March 7, 2000

Split Spoon Increment	Compressed Length	Split Spoon Increment Description	Analytical Sample Description and B(a)P Concentration
0' - 2'	32 cm	70% - dark sand (organic) with charcoal 30% - sand	Sample # 3021 topsoil B(a)P = 32,000 ng/g
2' - 4'	50 cm	100% - sand	

Previous
MOE Data

Date	Depth (cm)	[B(a)P] ng/g
Nov. 11, 1995	0 - 5	37,000
Apr. 22, 1997	40 - 60	200

Previous
Golder Data

Date	Depth (cm)	[B(a)P] ng/g
Aug 97 - Oct 98	0 - 5	19,160 /18,400
Aug 97 - Oct 98	0 - 10	19,100
Aug 97 - Oct 98	10 - 20	20,240
Aug 97 - Oct 98	20 - 30	4,670
Aug 97 - Oct 98	30 - 40	690
Aug 97 - Oct 98	40 - 50	530

Split Spoon Drill Site # 19

96 Ivy Ave. - Rear Yard - Tuesday March 7, 2000

Split Spoon Increment	Compressed Length	Split Spoon Increment Description	Analytical Sample Description and B(a)P Concentration
0' - 2'	44 cm	60% - dark sand (organic) with coal, brick 40% - sand	Sample # 3022 topsoil B(a)P = 18,000 ng/g
2' - 4'	54 cm	100% - sand	

Previous
MOE Data

Date	Depth (cm)	[B(a)P] ng/g
Apr. 22, 1997	0 - 5	5,800

Previous
Golder Data

Date	Depth (cm)	[B(a)P] ng/g
Aug 97 - Oct 98	0 - 5	6,530
Aug 97 - Oct 98	0 - 10	7,650
Aug 97 - Oct 98	10 - 20	13,830
Aug 97 - Oct 98	20 - 30	18,960
Aug 97 - Oct 98	30 - 40	2,620
Aug 97 - Oct 98	40 - 50	140

Split Spoon Drill Site # 20

98 Ivy Ave. - Rear Yard - Tuesday March 7, 2000

Split Spoon Increment	Compressed Length	Split Spoon Increment Description	Analytical Sample Description and B(a)P Concentration
0' - 2'	45 cm	10% - limestone screenings 40% - dark sand (organic) with coal, vegetation	Sample # 3023 topsoil (below screenings) B(a)P = 1,200 ng/g
2' - 4'	50 cm	100% - sand	

Previous
Golder Data

Date	Depth (cm)	[B(a)P] ng/g
Aug 97 - Oct 98	0 - 10	1,600
Aug 97 - Oct 98	10 - 20	1,880
Aug 97 - Oct 98	20 - 30	1,000
Aug 97 - Oct 98	30 - 40	270

Split Spoon Drill Site # 11

132 Ivy Ave. - Rear Yard - Monday March 6, 2000

Split Spoon Increment	Compressed Length	Split Spoon Increment Description	Analytical Sample Description and B(a)P Concentration
0' - 2'	43 cm	80% - dark sand (organic) with roots etc. 20% - sand	Sample # 3024 bottom of dark, organic soil near bottom of core B(a)P = 2,800 ng/g Sample # 3025 top of light sand layer near bottom of core B(a)P = 40<W ng/g
2' - 4'	50 cm	100% - sand (darker layer in middle with coal)	Sample # 3026 thin, dark sand layer, mid point of core B(a)P = 40<W ng/g

Previous
MOE Data

Date	Depth (cm)	[B(a)P] ng/g
Apr. 22, 1997	0 - 5	5,300

Previous
Golder Data

Date	Depth (cm)	[B(a)P] ng/g
Aug 97 - Oct 98	0 - 5	7,980
Aug 97 - Oct 98	0 - 10	6,740
Aug 97 - Oct 98	10 - 20	6,500
Aug 97 - Oct 98	20 - 30	6,230
Aug 97 - Oct 98	30 - 40	3,960
Aug 97 - Oct 98	40 - 50	620

Split Spoon Drill Site # 21

134 Ivy Ave. - Rear Yard - Tuesday March 7, 2000

Split Spoon Increment	Compressed Length	Split Spoon Increment Description	Analytical Sample Description and B(a)P Concentration
0' - 2'	39 cm	70% - dark sand (organic) with brick, coal, ash 30% - sand	Sample # 3027 topsoil B(a)P = 1,300 ng/g
2'- 4'	56 cm	100% - sand with coal (2 dark sand layers (organic))	Sample # 3028 dark sand layer, mid point of core B(a)P = 40<W ng/g

Previous
MOE Data

Date	Depth (cm)	[B(a)P] ng/g
Jul. 24, 1997	0 - 5	1,600

Previous
Golder Data

Date	Depth (cm)	[B(a)P] ng/g
Aug 97 - Oct 98	0 - 5	1,600
Aug 97 - Oct 98	10 - 20	1,670
Aug 97 - Oct 98	20 - 30	890
Aug 97 - Oct 98	30 - 40	250

Split Spoon Drill Site # 22

103 Ivy Ave. - Front Yard - Wednesday March 8, 2000

Split Spoon Increment	Compressed Length	Split Spoon Increment Description	Analytical Sample Description and B(a)P Concentration
0' - 2'	50 cm	40% - dark sand (organic) 60% - sand with coal	Sample # 3029 slightly dark sand layer, bottom of core B(a)P = 3,600 ng/g
2' - 4'	61 cm	100% - sand	

Previous MOE Data

Date	Depth (cm)	[B(a)P] ng/g
Jul. 24, 1997	0 - 5	4,500

Previous Golder Data

Date	Depth (cm)	[B(a)P] ng/g
Aug 97 - Oct 98	0 - 5	2,200
Aug 97 - Oct 98	20 - 30	1,670
Aug 97 - Oct 98	30 - 40	3,960
Aug 97 - Oct 98	40 - 50	11,600
Aug 97 - Oct 98	50 - 100	6,010

Split Spoon Drill Site # 23

105 Ivy Ave. - Rear Yard - Wednesday March 8, 2000

Split Spoon Increment	Compressed Length	Split Spoon Increment Description	Analytical Sample Description and B(a)P Concentration
0' - 2'	42 cm	10% - limestone screenings 10% - dark sand (organic) with coal, brick 80% - sand	Sample # 3030 dark sand layer below screenings B(a)P = 6,000 ng/g
2' - 4'	55 cm	100% - sand	

Previous
MOE Data

Date	Depth (cm)	[B(a)P] ng/g
Jul. 24, 1997	0 - 5	1,300

Previous
Golder Data

Date	Depth (cm)	[B(a)P] ng/g
Aug 97 - Oct 98	30 - 40	2,510
Aug 97 - Oct 98	40 - 50	130

Split Spoon Drill Site # 24

113 Ivy Ave. - Rear Yard - Wednesday March 8, 2000

Split Spoon Increment	Compressed Length	Split Spoon Increment Description	Analytical Sample Description and B(a)P Concentration
0' - 2'	46 cm	40% - dark sand (organic) with coal, ash 60% - sand with coal tar? / asphalt? near bottom	Sample # 3031 topsoil B(a)P = 1,600 ng/g Sample # 3032 dark sand layer, bottom of core B(a)P = 13,000 ng/g
2' - 4'	61 cm	100% - sand	

Previous
Golder Data

Date	Depth (cm)	[B(a)P] ng/g
Aug 97 - Oct 98	30 - 40	7,450
Aug 97 - Oct 98	40 - 50	630

Split Spoon Drill Site # 25

138 Ivy Ave. - Front Yard - Wednesday March 8, 2000

Split Spoon Increment	Compressed Length	Split Spoon Increment Description	Analytical Sample Description and B(a)P Concentration
0' - 2'	47 cm	30% - dark sand (organic) 70% - sand	Sample # 3033 topsoil B(a)P = 760 ng/g
2' - 4'	52 cm	100% - sand	
4' - 6'	61 cm	100% - sand	

Previous
MOE Data

Date	Depth (cm)	[B(a)P] ng/g
Apr. 23, 1997	0 - 5	3,800
Apr. 23, 1997	40 - 60	40

Previous
Golder Data

Date	Depth (cm)	[B(a)P] ng/g
Aug 97 - Oct 98	0 - 5	1,350
Aug 97 - Oct 98	0 - 10	1,310
Aug 97 - Oct 98	10 - 20	6,410
Aug 97 - Oct 98	20 - 30	110

Split Spoon Drill Site # 27

6 Bloomfield Ave. - Front Yard - Wednesday March 8, 2000

Split Spoon Increment	Compressed Length	Split Spoon Increment Description	Analytical Sample Description and B(a)P Concentration
0' - 2'	31 cm	60% - dark sand (organic) 40% - sand	Sample # 3034 bottom of topsoil layer B(a)P = 2,200 ng/g Sample # 3035 top of light sand layer, below topsoil B(a)P = 240 ng/g
2' - 4'	49 cm	100% - sand	
4' - 6'	54 cm	100% - sand	

Previous
Golder Data

Date	Depth (cm)	[B(a)P] ng/g
Aug 97 - Oct 98		3,100
Aug 97 - Oct 98	20 - 20	3,000
Aug 97 - Oct 98	30 - 40	2,600
Aug 97 - Oct 98	40 - 50	7,300 / 7,700

Split Spoon Drill Site # 7

Salvage Yard # 1 - Monday March 6, 2000

Split Spoon Increment	Compressed Length	Split Spoon Increment Description	Analytical Sample Description and B(a)P Concentration
0' - 2'	50 cm	20% - sand with concrete, gravel, glass, coal, coal tar 30% - silt 40% - silty sand 10% - silt	Sample # 3036 sand/gravel layer, top of core B(a)P = 77,000 ng/g
2' - 4'	61 cm	20% - sand with coal tar 30% - sand 10% - dark sand with coal, metal (iron?) nodules 30% - sand 10% - sand and gravel	Sample # 3037 dark layer, mid point of core B(a)P = 23,000 ng/g

Split Spoon Drill Site # 8

Salvage Yard # 2 - Monday March 6, 2000

Split Spoon Increment	Compressed Length	Split Spoon Increment Description	Analytical Sample Description and B(a)P Concentration
0' - 2'	30 cm	50% - dark sand (organic) with gravel, glass, asphalt coated stone 50% - silty sand with asphalt	Sample # 3038 dark sand/gravel layer, top of core B(a)P = 260,000 ng/g
2' - 4'	55 cm	90% - sand 10% - silty sand with asphalt coated stone	
4' - 6'	49 cm	30% - silty sand 10% - sand with asphalt, brick 30% - silty sand (brick red colour) 30% - clay with coal layer	Sample # 3039 asphalt bottom of core B(a)P = 40<W ng/g Sample # 3040 dark silt layer, 1/3 of way from top of core B(a)P = 5,000 ng/g
6' - 8'	33 cm	20% - sand and gravel 20% - brick 60% - silt	

Split Spoon Drill Site # 12

Salvage Yard # 3 - Tuesday March 7, 2000

Split Spoon Increment	Compressed Length	Split Spoon Increment Description	Analytical Sample Description and B(a)P Concentration
0' - 2'	48 cm	70% - sand and gravel with coal, coal tar, brick, glass 10% - silty sand 10% - gypsum? 10% - sand	Sample # 3041 dark sand/gravel layer, top of core B(a)P = 170,000 ng/g
2' - 4'	58 cm	20% - sand 60% - silty sand 20% - sand and gravel with coal	
4' - 6'	61 cm	40% - sand and gravel with coal 60% - silty sand	Sample # 3042 slightly dark sand, top of core B(a)P = 680 ng/g

Split Spoon Drill Site # 26

Thomson Groceries Yard - Wednesday March 8, 2000

Split Spoon Increment	Compressed Length	Split Spoon Increment Description	Analytical Sample Description and B(a)P Concentration
0' - 2'	50 cm	10% - sand and gravel 30% - sand with asphalt 30% - sand with brick 30% - silty sand with stone	Sample # 3043 thin dark sand layer, near top of core B(a)P = 140,000 ng/g
2' - 4'	61 cm	50% - silty sand with coal 20% - concrete and brick 30% - sand	
4' - 6'	49 cm	20% - sand and gravel 30% - sand with coal tar 50% - sand	Sample # 3044 dark sand layer, top of core B(a)P = 260,000 ng/g

Split Spoon Drill Site # 9

Wagstaff Drive Site # 2 - Monday March 6, 2000

Split Spoon Increment	Compressed Length	Split Spoon Increment Description	Analytical Sample Description and B(a)P Concentration
0' - 2'	26 cm	30% - concrete 30% - coal, ash 40% - black sand with coal	Sample # 3045 black layer, bottom 40% of core B(a)P = 400 ng/g
2' - 4'	45 cm	10% - concrete 10% - black sand with coal 10% - sand with brick 70% - sand	Sample # 3046 dark sand layer, 2/3 of way from top of core B(a)P = 240 ng/g
4' - 6'	61 cm	10% - dark sand 90% - sand	Sample # 3047 dark sand at top of core B(a)P = 80<T ng/g

Previous
MOE Data

Date	Depth (cm)	[B(a)P] ng/g
Aug. 27, 1997	0 - 2	36,000

Split Spoon Drill Site # 10

Wagstaff Drive Site # 6 - Monday March 6, 2000

Split Spoon Increment	Compressed Length	Split Spoon Increment Description	Analytical Sample Description and B(a)P Concentration
0' - 2'	40 cm	30% - concrete 70% - sand	Sample # 3048 dark sand layer below crushed concrete B(a)P = 480 ng/g Sample # 3049 clean sand, bottom of core B(a)P = 40<W ng/g

Previous
MOE Data

Date	Depth (cm)	[B(a)P] ng/g
Aug. 27, 1997	0 - 2	5,300